

AUTHOR: Syus'ko, P.M., Engineer SOV-111-58-9-22/30

TITLE: The Telegraphists are Over-fulfilling their Shift Norms
(Telegrafisty perevypolnyayut smennyye normy)

PERIODICAL: Vestnik svyazi, 1958, Nr 9, p 27 (USSR)

ABSTRACT: The author describes the method by which the telegraphists of Uzhgorod Telegraph, in competition with other regional communications offices, are overfulfilling their working norms.

ASSOCIATION: Zakarpatskoye oblastnoye upravleniye svyazi (The Trans-Carpathian Oblast Communications Board)

1. Telegraph systems--USSR 2. Employee relations--USSR

Card 1/1

BLINKOV, I.F., podpolkovnik, voyennyy letchik pervogo klassa; SYUSYUKALOV,
M.P., mayor

On the road to military mastery. Vest. Vozd. Fl. 41 no. 7:20-23
J1 '58. (MIRA 11:7)

(Aeronautics—Study and teaching)
(Bombing, Aerial)

SYUSYUKIN, A. A.

"Neural Control of Lactation in Cows." Cand Biol Sci, Moscow Veterinary Acad, Min Higher Education, Moscow, 1954. (KL, No 3, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)

SO: SUM No. 556, 24 Jun 55

SYUSYUKIN, A.A.

Natural conditioned lactation reflexes in cows. Zhur. ob. biol. 17
no.3:228-232 My-Je '56. (MLRA 9:8)

1. Moskovskaya Veterinarnaya akademiya, Kafedra patologicheskoy
fiziologii.
(LACTATION) (CONDITIONED RESPONSE) (COWS)

L 31309-66 EWT(1)/T JK

ACC NR: AP6022583

(A,N)

SOURCE CODE: UR/0346/66/000/001/0031/0035

AUTHOR: Likhachov, N. V. (Active member VASKHNIL; Head of laboratory); Andreyev, Ye. V. (Candidate of sciences); Onufriyev, V. P. (Candidate of sciences); Syusyukin, A. A. (Candidate of sciences)

ORG: Likhachov Virus Preparation Laboratory, GNKI (Laboratoriya virusnykh preparatov GNKI); Andreyev, Onufriyev, Syusyukin All-Union Scientific Research Foot-and-Mouth Disease Institute (Vsesoyuznyy nauchno-issledovatel'skiy yashchurnyy institut). 34
B

TITLE: Scientific prophylaxis of foot-and-mouth disease

SOURCE: Veterinariya, no. 1, 1966, 31-35

TOPIC TAGS: foot and mouth disease, disease control, vaccine, virus

ABSTRACT: This review article cites Soviet and non-Soviet literature as recent as 1965. It presents a brief history of foot-and-mouth disease control measures in Tsarist and Soviet Russia, as well as efforts in the Soviet Union and abroad to develop foot-and-mouth disease vaccines. Recently, lapinized virus vaccines, though still not effective enough, have prevented the development in the Soviet Union of epizootics of Types O and A. Frenkel's large-scale production method has now been introduced in the Soviet Union. The authors note the English emphasis on re-vaccination. Various attempts to obtain cheap, reliable vaccine are mentioned. A. A. Sviridov (Novosibirsk Scientific Research Veterinary Station) has obtained an avirulent variant of the virus by prolonged passages of Type A in a monolayer culture of new-born rabbit kidney; it is now being tested for large-scale production. [JPRS]

SUB CODE: 06 / SUBM DATE: none / ORIG REF: 019 / OTH REF: 025

Card 1/1 C

UDC: 619:616.988.43-084:636

0915

0600

USSR / Farm Animals. Cattle.

Q

Abs Jour : Ref Zhur - Biologiya, No 2, 1959, No. 7380

Author : Syusyukin, V. A.
Inst : Moscow Veterinary Academy
Title : Duration and Depth of Sleep in Cows as Relat-
ted to the Level of Their Milk Production

Orig Pub : Tr. Mosk. vot. akad., 1957, 20, 110-116

Abstract : Experimental investigations resulted in estab-
lishing the fact that in cows with a milk
productivity of 2876 kg (the productivity is
counted for 242 days, the cows were barren)
the general duration of sleep equaled 172 min,
including 42.0 percent of light sleep, 42.1
percent of medium sound sleep and 15.9 per-
cent of deep sleep; correspondingly, in cows
with a 4260 kg productivity (for 300 days of

Card 1/2

54

SYUSYUKIN, V. A., Cand of Bio Sci — (diss) "Physiological Characteristics of the Behavior of Cows as Determined by Their Health and Well-Being," Moscow, 1959, 12 pp (Moscow Veterinary Medicine Academy) (KL, 5-60, 125)

L 31331-66 EWT(1)/T JK

ACC NR: AP6022580 (A,N) SOURCE CODE: UR/0346/66/000/001/0016/0018

AUTHOR: Kuznetsova, S. V.; Syusyukina, M. S.; Shchedrin, Ye. L.; Kuznetsov, V. N.

ORG: All-Union Scientific Research Foot-and-Mouth Disease Institute (Vsesoyuznyy nauchno-issledovatel'skiy yashchurnyy institut) 28

TITLE: Biochemical indices in cultivation of foot-and-mouth disease virus B

SOURCE: Veterinariya, no. 1, 1966, 16-18

TOPIC TAGS: foot and mouth disease, virus, virology, amino acid

ABSTRACT: Research was carried out to study the dynamics of nitrogen and phosphorus metabolism and the pH of the medium for cultivating the foot-and-mouth disease virus in a suspension of cattle kidney cells. It was found that marked shifts occurred in the indices of nitrogen and phosphorus metabolism. The content of amino nitrogen in the inoculated suspension reached a maximum after 24 hours of cultivation of the virus, increasing more than 23% over the initial value. The amount of residual nitrogen in the same interval increased more than 24% over the initial value. There was a sharp increase in the amount of alanine (from 0.041 to 0.167 mg%) and glutamic acid (from 0.051 to 0.093 mg %), while the content of tyrosine, threonine and leucine declined; this can be considered a reflection of the processes of re-synthesis during reproduction of the virus. The amount of inorganic phosphorus in the inoculated suspension increased 31.3% over the initial value, while

Card 1/2

UDC: 619.616.988.43-093.35

0915

0596

L 31331-66

ACC NR: AP6022580

at the same time it increased 16.4% in the control suspension. Shifts in the pH of the medium to acid were more marked in the control than in the inoculated suspension. This depends on the concentration of live cells and might reflect the intensity of their metabolism. [JPRS]

SUB CODE: 06 / SUBM DATE: none / ORIG REF: 002 / OTH REF: 009

Card
Card

2/29/03

— SYUTA, Ya.

Effect of reduction processes and acidification on the solubility
of mineral compounds of soil. Pochvovedenie no.5:62-72 My
'62. (MIRA 15:6)

1. Institut obrabotki, udobreniya i pochvovedeniya, Pulavy,
Pol'skaya Narodnaya Respublika.
(Podzol)

YUSKOVETS, M.K., akademik, zasluzhennyj deyatel' nauki Belorusskoy SSR;
TUZOVA, R.V., kand.veterin.nauk; SYUSYUKIN, V.A., nauchnyj sotrudnik;
DEDYULYA, E.G., nauchnyj sotrudnik

Effectiveness of Veterinary Research Institute tuberculin in
the diagnosis of tuberculosis in chickens. Trudy NIVI 1:34-38
'60. (MIRA 15:10)

1. AN Belorusskoy SSR i Akademiya sel'skokhozyaystvennykh nauk
Belorusskoy SSR (for Yuskovets).
(Tuberculosis in poultry) (Tuberculin)

ROCHEV, N.N., glav. red.; VAVILOV, P.P., red.; VERTEL', E.I., red.; GORELIK, A.I., red.; GUZMAN, I.S., red.; KUZNETSOV, G.N., red.; MEDVEDEV, G.A., red.; MODYANOV, Ya.V., red.; PANTELEYEVA, A.A., red.; POLYAKOV, V.V., red.; POPOV, S.A., red.; POPOVA, S.M., red.; RAYEVSKIY, S.S., red.; RUDAKOV, S.V., red.; SYUTKIN, A.F., red.; USOV, A.I., red.; USTINOVA, I.K., red.; SHKIL', P.T., red.; CHEBYKIN, N.P., red.; MEZENTSEV, S.A., red.; MOROZOV, V.S., red.; OPLESNIN, I.I., tekhn. red.

[Forty years of the Komi A.S.S.R., 1921-1961; studies on the cultural and economic development of the Komi Republic] 40 let Komi ASSR, 1921-1961; ocherki o razvitiu ekonomiki i kul'tury Komi Respubliki. Syktyvkar, Komi knizhnoe izd-vo, 1961. 154 p. (MIRA 14:11)
(Komi A.S.S.R.—Economic conditions) (Komi A.S.S.R.—Culture)

SYUTKIN, A.F.; CHUKICHEV, M.P.; NEZENTSEV, S.A., red.; OPLESNIN,
I.I., tekhn. red.

[The Komi A.S.S.R.; concise handbook] Komi ASSR; kratkii spravochnik.
Syktyvkar, Komi knizhnoe izd-vo, 1962. 133 p.
(MIRA 15:12)
(Komi A.S.S.R.—Handbooks, manuals, etc.)

DURANOVSKIY, V.I.; SYUTKIN, A.I.

Results obtained in testing the T-140 tractor. Trakt. i sel'khoz-
mash. no.10:12-14 O '58. (MIRA 11:10)
(Tractors)

SOV/122-58-11-16/18

AUTHOR: Duranovskiy, V.I., Engineer
Syurkin, A.I., Engineer

TITLE: The T-140 Tractor (Traktor T-140)

PERIODICAL: Vestnik Mashinostroyeniya, 1958, Nr 11, pp 84-88 (USSR)

ABSTRACT: A track-laying tractor with a 140 hp engine has been developed at the Chelyabinsk Tractor Works (Chelyabinskiy Traktornyj Zavod), intended mainly for earth moving operations. The compression ignition engine, designated 6KDM-50t, operates between 400 and 1100 rpm and has a guaranteed fuel consumption of 208 g/hphr. At 1000 engine rpm the tractor speed varies between 2.38 kph in first gear and 10.9 kph in fifth gear or 2.67 kph in first reverse gear and 6.2kph in second reverse gear. The draw bar pull in first gear is 14850 kg. The length, width and height are 5.3, 2.74 and 2.8 m, respectively. The total weight is 15 tons and the specific soil pressure is 0.42 kg/sqcm. The compression ignition engine is started by a 19 hp petrol engine. The transmission assembly, shown in Fig.2 (cross-section) contains

Card 1/2

SOV/122-58-11-16/18

The T-140 Tractor

in a single unit the change gearbox, the planetary reversing gear and the driving sprocket wheel transmission. A twin-disc clutch is housed in the diesel engine flywheel and is controlled from a foot pedal through a pneumatic servo-motor. Servo mechanisms of the follow-up type also control the brakes. The driving sprocket transmissions consist of a single stage straight spur gear reduction. The contact stresses in none of the gears exceed 8000 kg/cm². Torsion bar suspension is used. Fig.5 illustrates the track rollers with a barrelled rim. Normal tracks have 700 mm width each but special tracks of 900 mm width can be installed for traversing sandy soils and swamps. There are 5 illustrations including 1 photograph.

Card 2/2

SYUTKIN, N. F.

Metallurgical Abst.
Vol. 21 May 1954
Properties of Alloys

"Jump-Like Deformation in the Linear "Elastic" Range
of the Strain Diagram [of Zinc-Aluminum Alloy]. N. F. Syutkin [Doklady Akad. Nauk S.S.R., 1953, 91, (1), 83-88].—[In Russian]. Stress/strain curves of an ageing Zn-20% Al alloy were photographically recorded at various temp. and strain rates. By careful adjustment of the light intensity, breaks in the linear elastic range of the curve typical of jump-like deformation were observed. The first jump occurs at very low stresses, and the value of the stress for the first jump has been plotted as a function of temp. at two strain rates. The results further indicate that plastic flow is occurring in the elastic range and that the first jump can be regarded as a Y.P. corresponding to the beginning of interaction between the precipitating phase and the deformation. (Translated by the U.S. National Science Foundation (NSF-tr-74)).—D. M. P.

Ural State Univ., Gor'kiy

USSR

Vine structure of the elongation curves of aging alloys in the definitely plastic region. N. F. Syutkin (A. M. Gor'kiy Ural State Univ.), Doklady Akad. Nauk S.S.R., 94, 502-5 (1954).—Expts. were made in which the effects of tensile deformation and phase transformation were caused to interact. Alloys of Zn with 20% Al in the form of wires 3 and 2.3 mm. in diam. and 30 and 35 mm. long were tested both as quenched from 375° and after aging at gradually decreasing temps. for a total time of 250 hrs. Tensile testing was done in triplicate at speeds of 2×10^{-1} and 2×10^{-1} cm./sec. and at temps. of 0, 20, 100, 150, 200, 250, 300, 350, and 375°. The photographically recorded elongation curves were not continuous lines but were composed of a no. of dark spots connected by lighter portions of the curve. Also, the curve was jagged or toothed, and in the case of "complex" curves the rising and more especially the falling part of each tooth was composed of a no. of separate jumps; i.e., spots. Complex curves were observed from 0 to 300° for quenched specimens and from 150 to 300° for aged specimens. This complex-stepped character of the curves was explained as the action of the pptsn. reaction in locally raising the shear stresses to near the crit. value for deformation. A small increase in stress then caused deformation to begin. The deformation in turn caused redistribution of stresses and produced the condition for further deformation in the vicinity of other pptsd. particles. At the end of this process further deformation could proceed only with increasing stress and the slope of the curve would change sign. This mechanism could be used to explain stepped elongation curves caused by any inhomogeneity that played a role analogous to that of particles of a ppts. phase.

A. G. Guy

M. J. G. test

126-5-3-16/31

AUTHOR: Syutkin, N. F.

TITLE: The Influence of Phase Precipitation from a Supersaturated Solid Solution on Plastic Deformation (Vliyanie fazovogo raspada peresyshchennogo tverdogo rastvora na plasticheskuyu deformatsiyu). I. 'Proportional' Deformation (I. 'Ravnomernaya' Deformatsiya)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol 5, Nr 3,
pp 508-515 (USSR)ABSTRACT: Stress-strain curves were obtained for a number of specimens, 30 and 35 mm long and 2 and 2.3 mm in diameter, which were made from zinc containing 20% aluminium and then water quenched from 375°C. The extensions were performed at speeds of $2 \cdot 10^{-4}$ and $2 \cdot 10^{-2}$ cm/sec and at various temperatures in the range 0 to 375°C, and were continued till necking began. For comparison the same tests were applied to aged specimens. A photographic recording method showed the stress-strain curves to possess a fine structure which can be interpreted as due to small tooth-like stress fluctuations; it is claimed that subsidiary experiments proved that the fine structure is not an artifact. The first tooth appears at a stress, which is well within the region usually designated asCard
1/2

126-5-3-16/31
The Influence of Phase Precipitation from a Supersaturated Solid Solution on Plastic Deformation. I. 'Proportional' Deformation.

elastic, and which decreases with increase in temperature but increases for an increase in deformation rate. From the stress-strain curves data are obtained on the dependence on temperature and speed of deformation of the stress for 0.2% strain, the yield point and the extension to necking. An explanation of all the results can be based on the recognition that a supersaturated solid solution is in an unstable state and that the precipitation of a second phase is encouraged by the application of an external stress. The precipitated particles create internal stresses and with the growth of the particles these increase until local yield takes place. The simultaneous occurrence of this in the regions surrounding several particles will manifest itself as a momentary relaxation of stress.

Card 2/2 There are 6 figures and 6 references, all of which are
Soviet.

ASSOCIATION: Ural'skiy Gosudarstvennyy Universitet imeni A. M. Gor'kogo (Ural State University imeni A.M. Gor'kiy)
SUBMITTED: July 26, 1956.

- 1. Aluminum-zinc alloys--Stresses
- 2. Aluminum-zinc alloys--Deformation
- 3. Aluminum-zinc alloys--Temperature factors
- 4. Aluminum-zinc alloys--Phase studies

AUTHOR: Syutkin, N. F. SOV/126-6-1-18/33

TITLE: Influence of Phase Precipitation From a Super-Saturated Solid Solution on Plastic Deformation (Vliyanije fazovogo raspada peresyshchennogo tverdogo rastvora na plasticheskuyu deformatsiyu) II Non-Uniform Deformation (Neravnomernaya deformatsiya)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 1, pp 135-140 (USSR)

ABSTRACT: In Part I of this paper (same journal, Vol 5, Nr 3, pp 508-515) stress-strain curves were obtained for a number of specimens, 30 and 35 mm long and 2 and 2.3 mm in diameter, which were made from zinc containing 20% aluminium and then water quenched from 375°C . The extensions were performed at speeds of $2 \cdot 10^{-4}$ and $2 \cdot 10^{-2}$ cm/sec and at various temperatures in the range 0 to 375°C , and were continued till necking began. For comparison the same tests were applied to aged specimens. A photographic recording method showed the stress-strain curves to possess a fine structure which can be interpreted as due to small tooth-like stress fluctuations; it is claimed that subsidiary experiments proved that the

Card 1/5

SOV/126-6-1-18/33

Influence of Phase Precipitation From a Super-Saturated Solid
Solution on Plastic Deformation

fine structure is not an artifact. The first tooth appears at a stress, which is well within the region usually designated as elastic, and which decreases with increase in temperature but increases for an increase in deformation rate. From the stress-strain curves, data are obtained on the dependence on temperature and speed of deformation of the stress for 0.2% strain, the yield point and the extension to necking. An explanation of all the results can be based on the recognition that a supersaturated solid solution is in an unstable state and that the precipitation of a second phase is encouraged by the application of an external stress. The precipitated particles create internal stresses and with the growth of the particles these increase until local yield takes place. The simultaneous occurrence of this in the regions surrounding several particles will manifest itself as a momentary relaxation of stress. In the here published second part of the paper, data are given on the discontinuous plastic deformation during non-uniform extension,

Card 2/5 i.e. from the instant of neck formation. The experiments

SOV/126-6-1-18/33

Influence of Phase Precipitation From a Super-Saturated Solid
S o l u t i o n on Plastic Deformation

were carried out on zinc-aluminium (20% Al) specimens in the hardened as well as in the aged states at the same temperatures and speeds of deformation ($2 \cdot 10^{-4}$ and $2 \cdot 10^{-2}$ cm/sec) as in the first part of the paper. On the basis of the obtained results the following conclusions are arrived at:

1. It was experimentally established that the teeth on the extension diagram in the plastic range observed earlier by numerous authors consists of individual discrete jumps differing in magnitude on the ascending and on the descending parts of each tooth.
2. The entire plastic deformation is composed of individual jumps, the total number of which is proportional to the full residual extension.
3. On the basis of the experimental data and in accordance with the theories of S. T. Konobeyevskiy on phase transformations, a conception has been evolved which permits a physical interpretation of processes of jump-like deformation as well as changes in the mechanical properties.

Card 3/5

SOV/126-6-1-18/33

Influence of Phase Precipitation From a Super-Saturated Solid
Solution on Plastic Deformation

4. This conception permits elucidating the jump-like deformation in mono- and poly-crystalline bodies, which do not appear to be super-saturated solid solutions, in presence of any type of non-uniformities which play a role similar to particles of a separating out phase.
5. On the basis of the proposed interpretation of the jump-like deformation it is shown that occurrence of "avalanche-type" jumps permits elucidating the softening and the "super-plasticity" of the investigated alloy.
6. The discontinuous (jump-like) plastic deformation during "uniform" extension differs qualitatively from the jump-like deformation occurring from the instant of neck formation; the difference consists in the fact that up to the maximum force only simple teeth are observed in the diagram, whilst after the maximum force simple

Card 4/5

SOV/126-6-1-18/33

Influence of Phase Precipitation From a Super-Saturated Solid Solution on Plastic Deformation

as well as composite teeth can be observed in the diagram.

There are 3 figures and 8 references, 6 of which are Soviet, 2 German.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo
(Ural State University imeni A. M. Gorkiy)

SUBMITTED: July 26, 1956

Card 5/5

1. Zinc alloys--Deformation 2. Zinc alloys--Phase
studies 3. Zinc alloys--Aging

"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001654320015-4

SYUTKIN, N.N.

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001654320015-4"

Dyutkin, N. N.

S/129/60/000/06/019/022
E073/E535

AUTHOR: Mints, R. I., Candidate of Technical Sciences
TITLE: All Union Scientific-Technical Seminar on Improving
the Cavitation Resistance of Components, Sverdlovsk
PERIODICAL: Metalovedeniye i termicheskaya obrabotka metallov,
1960, No 6, pp 58-60 (USSR)
ABSTRACT: The seminar was held at the initiative of the Problems
Laboratory for Metallurgy at the Ural Polytechnical
Institute imeni S. M. Kirov jointly with other
organizations. In the seminar representatives of
research establishments and works from Sverdlovsk,
Perm', Chelyabinsk, Barnaul, Gor'kiy, Odessa,
Leningrad, Yerevan, Murmansk, Khar'kov and other
places participated. This report gives brief summaries
of the following papers which were read:
G. D. Ter-Akopyan, Candidate of Technical Sciences,
"Cavitation failures in hydraulic turbines";
L. I. Ponarskiy, Engineer, "Cavitation in hydraulic
turbines"; M. I. Kuransovich, Engineer, "Cavitation
failures in runners of centrifugal pumps"; Marinin, A.A.,
Engineer, "Cavitation failures in marine propellers";

Card 1/2

N. N. Ivanchenko, Candidate of Technical Sciences,
"Cavitation failures in diesel engines"; A.P. Chervyakov,
Engineer, "Increase of the cavitation-erosion stability
of jacket and cylinder liners of the diesel engines D6
and D12"; I.N. Bogachev, Doctor of Technical Sciences,
"Mechanism of the cavitation failure of metallic alloys
and principle for the selection of such alloys";
R.I. Mints, Candidate of Technical Sciences, "Combating
cavitation failure by using surface-active additions to
the liquid phase of closed systems"; R.Sh. Shklyar,
Candidate of Technical Sciences, D.D. Slyusareva, Engineer,
and M.M. Syutkin, Engineer, "Structural changes in the
initial stages of cavitation failure"; T.M. Petukhova,
Engineer, "Influence of the structure on the resistance
to cavitation of bronze"; V.K. Gavranek, Candidate of
Technical Sciences and D.N. Borivshchikin, Engineer,
"Cavitation erosion of metals, thermal and mechanical
effects in the cavitation zone".

Card 2/2

L 56068-65 EWT(1)/EWP(e)/EWT(m)/EWT(i)/ENG(m)/EPF(n)-2/EPR/EPA(w)-2/EEC(t)/
T/EWP(t)/EW(z)/EWP(b)/EWA(m)-2/EWA(c) Pz-6/Pad/Ps-4/Pi-4/Pu-4 IJP(c)
JD/HW/JG/AT

ACCESSION NR: AP5018554

UR/0020/64/158/004/0821/0823/9
63 B

AUTHOR: Komar, A. P. (Academician AN UkrSSR); Syutkin, N. N.

TITLE: Microrelief and form of the points of an electron gun following electric breakdown in vacuo

SOURCE: AN SSSR. Doklady, v. 158, no. 4, 1964, 821-823 and side of page facing p. 821

TOPIC TAGS: electron microscope, crystal, metallography

Abstract: The authors describe the results of an experiment conducted at the Physico-Technical Institute im. A. F. Ioffe in connection with improvements in the electron microscope suggested by the Institute a few years ago.

The study of metals and alloys by means of an autoelectronic microscope was for some time limited to the case of comparatively high-fusible substances, such as W, Mo, Re, the metals of the platinum group, etc. For metals with melting point $\leq 1,500^{\circ}$ it was technologically very difficult to prepare discharge points which would satisfy research requirements. The method suggested by the Institute (the "broken vacuum-arc method") was shown to be effective in qualitative electron optical studies of both

Card 1/3

L 56068-65

ACCESSION NR: AF5018554

alloys and compounds with the melting points referred to.

The authors' experiment was undertaken to supply lacking information on the dimensions and curvature of the points--factors which have a direct bearing on the electric field at the surface of the emitter and, hence, also on the magnification on the screen (by reason of scale distortion).

For the experiment a very pure nickel-beryllium alloy (1% Be) and platinum were chosen. The use of platinum, the least oxidizable of metals, reduced to a minimum the possibility of accumulating a thick oxide coat on the specimen; with the alloy it was possible to estimate the effect of an added metal on the form of the protuberances. Ordinary points made from the materials referred to were prepared by means of electrolytic pickling in a vacuum at a temperature 100 - 150° below the melting point.

Practically hemispherical points were obtained (the radius in the case of the Ni-Be alloy $\approx 8 \cdot 10^{-5}$ cm, and in the case of the platinum $\approx 3 \cdot 10^{-5}$ cm). Points were accepted which gave a sufficiently stable and symmetrical autoemission picture of the crystal boundaries.

Initially the apices of the "macropoints" were nearly hemispherical in shape; following breakdown there was significant alteration of the surface. The authors believe that a liquid phase occurs at the site of breakdown and that this, supplemented by ponderomotive forces, gives rise

Card 2/3

L 56068-65

ACCESSION NR: AP5018554

"macropoint." Repeated breakdown leads to pitting of the macropoint surface, numerous spots then appearing on the screen; the latter, following warming, as a rule do not give crystallographically correct images. The authors estimate that the radius of curvature of the subpoints as obtained by the electron microscope is approximately one-tenth as great as that of the macropoint. On this basis and in consideration of the fact that the subpoints are not "high," the magnification factor of their electron image can be obtained from Rose's formula (J. Appl. Phys., 27, 215, 1956); the result is 3 - 5 times greater than in the case of ordinary points. The authors consider that their method of preparing points yields quantitative results which are quite as satisfactory as those obtained from ordinary points.

The article is accompanied by electron photos illustrating the experiment. Orig. art. has 11 Figures.

ASSOCIATION: Fiziko-tehnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR
(Physico-Technical Institute, Academy of Sciences SSSR)

SUBMITTED: 07Jul63

ENCL: 00

SUB CODE: EC, MM

NO REF SOV: 003

OTHER: 003

JPRS

Card 3/3 DK

2001/01/01/009/019

2001/01/01/009/019

S/126/61/011/001/009/019
2001/01/01/009/019REF ID: Pogachev, I.N., Shklyar, R.Sh., Slyusareva, L.D.,
Mints, R.I. and Syutkin, N.N.TITLE: Change in Structure and Phase Composition of Some
Austenitic Steels in the Initial Stages of Cavitation
FailurePUBLICATION: Fizika metallov i metalovedeniye, 1961, Vol.11, No.1,
pp. 76-93

TEXT: Pogachev and Mints have previously shown that the resistance to cavitation of austenitic nickel manganese, chromium-nickel and chromium-manganese steels varies greatly (Ref.1). The object of the present work was to study structural changes during cavitation failure in the surface layers of the austenitic steels of the following types and compositions (%):

	C	Ni	Mn	Cr
1K-18Mn	0.12	8.39	0.92	16.05
2CG10Kh9	0.31	0.13	10.30	9.117
10N25	0.40	25.00	0.20	0.13
20G1h	0.81	1.10	10.50	0.50

Card 1/4

Scgk.2
S/126/t1/011/001/009/019
E111/EP-52

Change in Structure and Phase Composition of Some Austenitic Steels
in the Initial Stages of Cavitation Failure

Specimens were plunged in water after holding "or 30 minutes at 1050°C. After removal of the outer layers, specimens were subjected to the cavitation action of a magnetostriction vibrator for 5, 10, 15 and more minutes. Phase composition changes were qualitatively determined from X-ray patterns obtained from a polished section. Structural changes were determined from interference-line width and also changes in shape and dimensions of individual spots. The back-reflection camera provided three images of the same interference ring on one film at different specimen-film distances. Spot dimensions were measured on all rings in tangential and radial directions with the aid of a type V3A-2 (14-2) comparator. Patterns were obtained from the same part of a given specimen after various treatments. Line width was measured on patterns obtained separately in chromium radiation with rotation of both specimen and film. Two of the steels were also studied electron-microscopically before and after testing for 5 and 10 minutes. The work showed that the austenite lines obtained exclusively from all specimens before testing were

Card 2/1.

89042
S/126/61/011/001/009/019
E111/E152

Change in Structure and Phase Composition of Some Austenitic Steels
in the Initial Stages of Cavitation Failure

supplemented in three of the steels by other lines after testing. The transformation of austenite was different in two steels: in type 1Kh18N8 (1Kh18N8) the alpha-phase was formed; in type 30F10X9 (30G10Kh9) epsilon-phase was formed as well. This was confirmed in the electron photomicrographs. In type 40H25 (40M25) steel the transformation was similar to that in 1Kh18N8 but slower, while in 80 Lb (80G1Lb) only austenite lines were found even after prolonged specimen treatment. Interference spots generally survived specimen treatment and spot changes were similar in all four steels. The situation is qualitatively represented by the authors in terms of changes in the disorientation angle for individual crystals. In Fig.5, this angle (minutes) is plotted against treatment time (minutes) for various crystals of 40H25 (plot "a") and 80G1Lb (plot "b") steels. For all the steels the width of the $(311)_\beta$ line increased in the first stages of treatment and then became steady. From the photometric curve of the $(311)_\beta$ line dimensions of mosaic blocks and II type disturbances were found (as in Ref.2): in the first

Card 3/4

89942

S/126/614 11/001/009/019
Ell17A52

Changes in Structure and Phase Composition of Some Austenitic Steels
in the Initial Stages of Cavitation Failure

After a few minutes the former decrease rapidly and the latter increase; the intensity of these effects being different for the different steels. The authors conclude that resistance to cavitation disruption rises when tetragonal martensite, epsilon phase and fine carbides are liberated within the austenite grain; resistance falls when alpha-phase (low in carbon) is liberated either within or around the grain. There are 7 figures, 2 tables and 3 Soviet references.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S.M.Kirova
(Ural Polytechnical Institute imeni S.M.Kirov)

SUBMITTED: April 1, 1960

Card 1/1

L 6411-66 EWT(m)/T/EWP(t)/EWP(z)/EWP(b)/EWA(c) IJP(c) JD/HW/JG
ACC NR: AP5027409 SOURCE CODE: UR/0181/65/007/011/3310/3319

AUTHOR: Komar, A. P.; Syutkin, N. N.

ORG: Physicotechnical Institute, AN SSSR, Leningrad (Fiziko-tehnicheskiy institut
im. A. F. Ioffe AN SSSR)

TITLE: Field emission microscopy of Ni-Be alloy

SOURCE: Fizika tverdogo tela, v. 7, no. 11, 1965, 3310-3319

TOPIC TAGS: beryllium base alloy, nickel alloy, field emission microscope, solid solution

ABSTRACT: The paper is a continuation of a previous article (A. P. Komar, N. N. Syutkin, DAN SSSR, 150, 1029, 1963) on the use of the field emission microscope for studying both surface and bulk dissolution of supersaturated binary solid solutions. In this previous work, some preliminary results of studies on the Ni-Be system were given. In the present paper, more detailed data are given from a further study of the same alloy. Field emission photomicrographs are taken of hardened and tempered specimens after holding at various temperatures. A study of these photographs shows

Card 1/2

P7012036

L 6411-66

ACC NR: AP5027409

that dissolution of the supersaturated alloy begins with enrichment of the Be surface and subsequent formation of nuclei for the new phase. The generation of these nuclei is statistic in nature with a probability which differs in various sections of the crystal. The new phase coagulates in a regular manner: parallel to the [110] zone and in the form of rosettes close to faces [111] and [100]. Individual sections of NiBe may move along the surface of the specimen as a unit for a considerable distance with something similar to Brownian motion. The NiBe sections on the surface of the specimen are flat formations with a thickness of no less than one layer of atoms. The aging process on the surface is continuous from the initial stages to complete dissolution of the alloying component. The work function of the NiBe phase is less than the work function of pure Ni and Be independently of the linear dimensions beginning at 20 angstroms. (Orig. art. has: 6 figures.

SUB CODE: SS,MM/ SUBM DATE: 01Jun65/ ORIG REF: 010/ OTH REF: 002

OC
Card 2/2

L 12659-63

EWP(q)/EWT(m)/BDS

ASD/AFFTC

JD/JG/HW-2

ACCESSION NR: AP3002872

61

59

S/0020/63/150/005/1029/1031

AUTHOR: Komar, A. P. (Academician, AN UkrSSR); Syutkin, N. N.TITLE: "Hot" aging and recovery in Ni-Be alloy as observed in a
field-emission microscope

21 21

SOURCE: AN SSSR, Doklady*, v 150, no. 5, 1963, 1029-1031

TOPIC TAGS: hot aging, recovery, Ni-Be alloy, Ni, Be, field-emission microscope, heat treatment, high-frequency furnace, vacuum deposition

ABSTRACT: The purpose of this work was the demonstration of the applicability of the field-emission microscope in the study of "hot" aging. Two samples of a Ni-Be alloy were used. Each of them had 1% of Be by weight. One sample was prepared in a high-frequency furnace, the other one by vacuum deposition. The needle point of the samples was prepared by the method of interrupted vacuum as described by Komar et al. (Radiotekhnika i elektronika, no. 5, 1960, 1342). Pulsating voltage of 50 hz and 5 to 45 kv was applied. Magnifications reached 250,000. The results are

Card 1/2

KOMAR, A.P., akademik; SYUTKIN, N.N.

Microrelief and shape of the pointed tips of an electron projector
following an electric breakdown in a vacuum. Dokl. AN SSSR 158 no.
4:821-823 0 '64. (MIRA 17:11)

1. Fiziko-tehnicheskiy institut im. A.F.Ioffe AN SSSR. 2. AN UkrSSR
(for Komar).

SYUTKIN, P.F.

Automatic method for mixing the formed elements of the blood. Lab,
delo 7 no.5:61 My '61. (MIRA 14:5)

1. Krayevaya poliklinika No.1(glavnyy vrach A.P.Mikulich) Krasnodar-
skogo krayevogo otdela zdravookhraneniya.
(BLOOD)

SYUTKIN, P.F.

Fixation of blood smears using phenol vapors. Lab.delo 7 no.11:
52-53 N '61. (MIRA 14:10)

1. Krayevaya poliklinika No.1 Krasnodarskogo krayevogo otdela
zdravookhraneniya.
(BLOOD--ANALYSIS AND CHEMISTRY) (PHENOLS)

BYTYKH, I.B.; SHCHENKO, F.A.; GEL'D, P.V.

Stability of the superlattice of Fe₃Si at high temperature.
Fiz. met. i metalloved. 18 no.6:940-941 D '64.

(MIRA 18:3)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.

SYUTKIN, S., inzh. po tekhnike bezopasnosti

The number of accidents has been cut in half. Okhr.truda i
sots.strakh. no.5:75 N '58. (MIRA 12:1)

1. Zavod "Krasnaya kuznitsa," Arkhangel'sk.
(Archangel--Industrial accidents)

L 16006-66 EWP(j)/EWT(m) RM
ACC NR: AP6005517 (A)

SOURCE CODE: UR/0080/66/039/001/0164/0170

AUTHOR: Syutkin, V. N.; Slavetskaya, P. A.; Koz'mina, O. P.; Danilov, S. N.

ORG: none

TITLE: Synthesis and properties of mixed cyanoethyl cellulose esters and ethers

SOURCE: Zhurnal prikladnoy khimii, v. 39, no. 1, 1966, 164-170

TOPIC TAGS: ether, ester, cellulose

ABSTRACT: Cellulose ethers were cyanoethylated by introducing cyanoethoxyl groups. Methyl-, ethyl-, benzyl-, trityl-, and allylcyanooethylcellulose with different degrees of substitution were thus obtained. To produce esters, acylation of incomplete cyanoethyl ethers was carried out by using acid chlorides in pyridine. The introduction of functional groups which differ in size and structure into the cellulose molecule widens the choice of solvents which can be used and causes a change of the glass point. During the synthesis of mixed cyanoethyl cellulose ethers and esters, no appreciable degradation of the cellulose macromolecule takes place, as indicated by intrinsic viscosity data. Infrared spectra of the mixed ethers and

Card 1/2

UDC: 661.728

"APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001654320015-4

B^L'SHAKOV, V.N.; SYUTKINA, K.A.

Ectoparasite fauna of murine rodents in Sverdlovsk Province.

Trudy Ural. otd. NIIIP no.2:125-128 '59. (NFA 14:11)

(Sverdlovsk Province--Insects, Injurious and beneficial)

(Parasites--Rodentia)

APPROVED FOR RELEASE: 08/31/2001

CIA-RDP86-00513R001654320015-4"

SYUTKINA, K.A.; KOTEL'NIKOVA, G.M.

Bloodsucking Diptera in the area of the railroad construction
between Ivdel' and Ob' (northern Transuralia). Zool. zhur. 44
no.1:60-66 '65. (MIRA 18:4)

1. Sverdlovskiy meditsinskiy institut.

TOPORKOVA, I.Ya.; SYUTKINA, V.A.

Ectoparasite fauna of murine rodents of the Denezh'kin Kamen' Preserve. Trudy Ural. otd. NOIP no.2:129-132 '59.

(MIRA 1/11)

(Denezhkin Kamen' Preserve—Insects, Injurious and beneficial)
(Parasites—Field mice)

TOPORKOVA, L.Ya.; SYUTKINA, K.A.

Ectoparasites of murine rodents in mountain forests of the southern
Urals. Uch.zap.UrGU no.31:91-95 '59. (MIRA 14:5)
(Petropavlovka region (Chelyabinsk Province--Insects, Injurious
(Parasites--Field mice) and beneficial)

GABERTSETTEL', A.I.; SYUTKINA, M.A.

Selecting material and blanks for rubber-coated bearing backings.
Inform.tekh.sbor.no.1:14-16 '54. (MIRA 9:7)

1.Leningradskiy Kirovskiy zavod.
(Bearings (Machinery))

GABERTSETTEL', A.I.; SYUTKINA, M.A.

Mastering the technique of manufacturing MNts 15-20 alloy castings.
Inform.tekh.sbor.no.1:40-44 '54. (MIRA 9:7)

1.Leningradskiy Kirovskiy zavod.
(Nickel silver) (Foundry)

L 08793-67 EWT(m)/EWP(j) IJP(c) WW/RM
ACC NR: AP6030843 (A, N) SOURCE CODE: UR/0191/66/000/009/0010/0011

AUTHOR: Gel'fman, Ya. A.; Zemlyanskiy, N. N.; Lauris, I. V.; Syutkina, O. P.; Kuskova, V. P.; Panov, Ye. M.

ORG: none

49

TITLE: Stabilization of polyvinylchloride by organotinoxanes

SOURCE: Plasticheskiye massy, no. 9, 1966, 10-11

TOPIC TAGS: vinyl chloride, polymer, tin compound, organotin compound, organometallic compound, solid mechanical property, heat resistance

ABSTRACT: The effect of organotinoxane-type additives $[CH_3COO(C_4H_9)_2SnO]$, $CH_3COO[(C_4H_9)_2SnO]_4OCCH_3$, and $[C_{11}H_{23}COO(C_4H_9)_2Sn]_2O$ on the thermal stability of polyvinylchloride was investigated. The aging characteristics of the stabilized PVC was tested according to GOST 10226-62 and the decomposition temperature was tested according to the GOST5960-51 standard. It was found that the PVC stabilized with organotinoxanes had a thermal stability comparable to that of PVC stabilized with conventional R_2PbX_2 stabilizers. It was also found that the organotinoxane stabilizer based on acetic acid was as effective as that based on lauric acid. Orig. art. has: 2 tables.

SUB CODE: 11/ SUBM DATE: 00/ ORIG REF: 004/ OTH REF: 004

UDC: 678.743.22:678.048.9

Card 1/1 nst

137-58-6-13322

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 309 (USSR)

AUTHORS: Yakovleva, E. S., Syutkina, V. I.

TITLE: The Mechanism of Plastic Deformation of Aluminum-magnesium Solid Solutions (Mekhanizm plasticheskoy deformatsii aliuminiyevo-magniyevykh tverdykh rastvorov)

PERIODICAL: V sb.: Issled. po zharoprochn. splavam. Vol 2. Moscow, AN SSSR, 1957, pp 266-274

ABSTRACT: Microscopic and x-ray methods were employed in an investigation of the effect of concentration of an alloying element on the mechanism of plastic deformation (D) of a binary solid solution of Mg in Al. Alloys containing 0.01, 0.04, 0.10, 0.30, and 0.92% Mg were studied. The specimens (S) were in the form of strips having dimensions of 50x3x1.8 mm. The grain size in all alloys was 0.01 mm. After electropolishing, the annealed S's were stretched in a machine at a rate of 0.2%/sec at temperatures of -193, +18, and +250°C. In addition, at 250°, all S's were subjected to creep tests at rates of $2-4 \times 10^{-3}\%$ /hr. As a result of investigations of two degrees of D. corresponding to elongations of 2% and 13%, it was

Card 1/2

137-58-6-13322

The Mechanism of Plastic Deformation (cont.)

established that the employment of Mg as an alloying element results in a more uniform distribution of slip D in Al grains. As the Mg content is increased, the spacing between slip traces decreases together with the magnitude of the shear in the slip traces. Within the investigated interval of temperatures, the D, carried out at a rate of 0.2%/sec, produced crumbling of grains into disoriented zones of three different sizes. The extent of disorientation of such zones attains a magnitude of $1^{\circ}30'$ and is very stable. As the Mg content is increased, disoriented zones appear in regions included into deformation strips. High-temperature plastic D is accompanied by slipping along grain boundaries; the magnitude of the slipping decreases nonmonotonously with increasing Mg content in the alloy and attains a minimum when the Mg content is 0.1%. The hardening of the Al, resulting from the appearance of Mg atoms in the alloy, is explained by the following factors: a more complete inclusion of the entire volume of metal grains into the D process; increased magnitude of heterogeneous stresses within grains producing fragmentation of grains into strongly disoriented zones and intensification of processes of rising diffusion resulting in relaxation of the stresses in the grains; a reduction in the mobility of lattice distortions owing to the formation of clouds of Mg atoms in the vicinity of the dislocations.

V.N.

Bibliography: 34 references. 1. Aluminum-magnesium alloys--Deformation 2. Aluminum-magnesium alloys--Mechanical properties 3. Aluminum-magnesium alloys--Test results Card 2/2 4. Aluminum-magnesium alloys--Microscopic analysis 5. Aluminum-magnesium--X-ray 6. Grains (Metallurgy)--Metallurgical effects

AUTHORS: Syutkina, V. I. and Yakovleva, E. S. 126-5-3-15/31

TITLE: The Influence of Magnesium on the Plastic Deformation of Aluminium-Magnesium Alloys (Vliyaniye magniya na mehanizm plasticheskoy deformatsii alyuminiyevomagniyevykh splavov)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol. 5, Nr 3, pp 501-507 + 2 plates (USSR)

ABSTRACT: Polycrystalline test-pieces in the form of strips were manufactured from solid solutions of magnesium in aluminium containing respectively 0.00, 0.01, 0.04, 0.10 and 0.30% magnesium. The grain size was almost constant. Specimens of each composition were electropolished and subjected to extensions of 2% and 14% at a rate of 0.2% per sec at temperatures of -196°C, 18°C and 250°C, and to extensions of 2% and 14% at 4×10^{-3} % per hour at 250°C only. The surfaces of the deformed specimens were examined microscopically, the authors distinguishing between straight and curved slip lines and slip bands. The distance between slip lines was measured and interferometric methods were used to determine the slip displacement and the displacement along the grain boundaries. With specimens extended to 2% at 0.2% per sec the displacement in the straight slip lines was almost

Card
1/3

126-5-3-15/31

The Influence of Magnesium on the Plastic Deformation of Aluminium-Magnesium Alloys

constant at 0.1μ for all magnesium contents. Increase in the magnesium content tended to decrease the distance between slip lines. Curved slip lines occurred, evidently at 250°C only, in alloys of magnesium contents up to 0.1%, the displacement in them decreasing and the distance between them increasing with increasing magnesium content. With strong alloying deformation bands appeared. The displacement along the grain boundaries varied in a non-monotonic way with magnesium content having a minimum at 0.1% magnesium. In specimens extended to 2% at $4 \times 10^{-3}\%$ per hour no slip lines appeared. The displacement along grain boundaries, however, was again a minimum for a magnesium content of 0.1%. 14% extension produced a coarser distribution of slip phenomena. The same general dependence of displacement in, and separation between, slip lines on the magnesium content was observed. Though graphs are given for the behaviour of the curved slip lines, it is stated that in this respect differences between grains were great. Slip bands were always present; their number and the displacement in them increased with

Card
2/3

126-5-3-15/31

The Influence of Magnesium on the Plastic Deformation of Aluminium-Magnesium Alloys

increasing magnesium content. The grain boundary displacement showed the same dependence on magnesium content as in the previous cases. These observations were explained qualitatively on the basis of the lattice distortions produced by the presence of magnesium atoms, it being suggested that the distortions blocked the progress of dislocations.

There are 13 figures and 13 references, 10 of which are Soviet, 2 English.

ASSOCIATION: Institut fiziki metallov Ural'skogo filiala AN SSSR
(Institute of Metal Physics, Ural Branch of the Ac.Sc., USSR)

SUBMITTED: October 15, 1956

1. Aluminum-magnesium-alloys--Deformation 2. Magnesium--Metallurgical effects 3. Aluminum-magnesium-alloys--Test results

Card 3/3

AUTHORS: Syutkina, V. I., and Yakovleva, E. S. SOV/126-6-2-20/34

TITLE: Sub-structure of grains of deformed aluminium-magnesium alloys (Substruktura zeren deformirovannykh alyuminiyevomagniyevykh splavov)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 2, pp 326-333 (USSR)

ABSTRACT: For a series of aluminium-magnesium alloys the sub-structure was studied which forms during the deformation within a wide range of temperatures and drawing speeds. Alloys were investigated containing 0.00; 0.01; 0.04; 0.10; 0.30; 0.92% magnesium and which were manufactured from an aluminium containing 0.001% Fe, 0.0014% Si, 0.0011% Cu and traces of zinc, magnesium and manganese; the magnesium used was electrolytically manufactured and chemically pure. The average linear grain dimensions were the same for all alloys in the initially annealed state, equalling 0.1 mm. Deformation was effected on a machine intended for applying tensile stresses on thin specimens at the temperatures -196, +20 and +250°C with a deformation speed of 0.2%/sec. The sub-structure of the grains was investigated for two degrees of

Card 1/5

SOV/126-6-2-20/34

Sub-structure of grains of deformed aluminium-magnesium alloys

deformation equalling 2 and 14%. Furthermore, after testing, all the alloys were investigated for creep at 250°C with a speed of 4.10%/hr and a deformation corresponding to a 2% extension. The specimens consisted of strips of 2 x 1 x 50 mm. The investigations were effected by using the Laue X-ray method and by the optical polarisation method. The influence of magnesium on the block formation was studied by the X-ray method on the basis of the magnitude and the character of the radial blurring of the Laue patterns, which were obtained using the continuous radiation spectrum of copper. The polarisation method enables visual observation of the formation of deorientated sections in the grains; the sensitivity of this method is low and the sub-structure in the grains can be observed if the deorientation of adjacent sections exceeds 0.5 to 1°. This method was used for studying the sub-structure occurring at the later stages of deformation equalling 14 to 15%. Some of the obtained Laue patterns are reproduced (Figs. 1 and 2) as well as micro-photos taken with polarised light indicating the block formation in the specimens (Figs. 3, 4).

Card 2/5

SOV/126-6-2-20/34

Sub-structure of grains of deformed aluminium-magnesium alloys

It was established that alloying of aluminium with magnesium brings about a change in the sub-structure of the grains occurring during deformation. For all the applied temperatures and deformation speeds, the dimensions of the blocks which form in the regions enclosed between the slip traces decrease with increasing Mg content. Furthermore, the quantity and also the degree of deorientation of large deorientated sections also increase. The influence of magnesium in the alloy on the decrease of the dimensions of the sub-structure blocks is most pronounced at high deformation temperatures. The change in the number and the degree of deorientation of the large deorientated sections can be clearly observed at all temperatures. The refining of the blocks of the sub-structure is due to two causes: decrease of the distance between the slip traces (i.e. the width of the area where blocks occur) and decrease of the mobility of the lattice distortions which form the block boundaries. The decrease in the mobility of the distortions can be brought about by appearance in these of magnesium atoms.

Card 3/5 The formation of large deorientated sections in the

SOV/126-6-2-20/34

Sub-structure of Grains of Deformed Aluminium-Magnesium Alloys

grains during deformations is the consequence of non-uniform stresses occurring in the grains due to interaction between grains. The increase in the quantity and the degree of deorientation of such sections with increasing magnesium content in the alloy indicates an increase in the non-uniform stresses inside the grains. Such an increase can take place since, according to Green, Pavlov et alii (Ref.15), the magnesium hardens the alloy. Furthermore, it is known that with increasing magnesium content the grain boundaries will harden more than the body of the grain; this brings about a reduction of the stress relaxation at the boundaries and intensifies the interaction of the grains. The refining of the block structure and the growth of non-uniform stresses in the grains with increasing magnesium content in the alloy are to a large extent decisive from the point of view of high coefficient of hardening of aluminium-magnesium alloys.

It is necessary to point out that qualitatively magnesium brings about the same type of deformation sub-structure

Card 4/5

SOV/126-6-2-20/34
Sub-structure of Grains of Deformed Aluminium-Magnesium Alloys

in aluminium as the reduction of the deformation temperature.

There are 4 figures and 16 references, 6 of which are Soviet, 9 English, 1 German.

ASSOCIATION: Institut fiziki metallov Ural'skogo filiala AN SSSR
(Institute of Metal Physics, Ural Branch of the Ac.Sc.,
USSR)

SUBMITTED: December 26, 1956

Card 5/5 1. Aluminum alloys--Analysis 2. Grains (Metallurgy)--
Structural analysis 3. Alloys--X-ray analysis 4. Alloys--
Test results

542 TKINA U.I.

2(6) PHASE I BOOK EXPLOITATION 307/2385

Akademiya Nauk SSSR

Mekhanicheskie problemy prochnosti tvorogo i sverk shirokii stazy (Some Problems in the Strength of Solids Collection of Articles). Novosibirsk: Izd-vo Akad. Nauk SSSR, 1959. 366 p. Extralip printed. 2,000 copies printed.

Ed. of Publishing House: V. I. Aver'yanov; Tech. Ed.: R. S. Pernov; Editorial Board: A.P. Iofe, Academician G. V. Kurchatov, Academician J. P. Konstantinov, Corresponding Member USSR Academy of Sciences; V. P. Yatsko, Doctor of Physical and Mathematical Sciences, Professor (Born: Ed.); A. G. Olsoum, Doctor of Technical Sciences, Professor; M. A. Zelenin, Doctor of Physical and Mathematical Sciences; V. A. Stepanov, Doctor of Technical Sciences; Yu. B. Friedman, Doctor of Technical Sciences, Professor; S. S. Iofe, Candidate of Technical Sciences (Deputy Head. Ed.).

FOREWORD: This book is intended for construction engineers, technologists, physicists and other persons interested in the strength of materials.

CONTENTS: This collection of articles was compiled by the Orderly Executive Committee of the Institute of Applied Physics and Mathematical Sciences (IAMP) and the Minister's Executive Committee of the USSR (Institute of Applied Physics, Academy of Sciences, USSR) in commemoration of the 50th Birthday of Nikolay Nikolaevich Davydov, Member of the Ukrainian Academy of Sciences, founder and head of the Odesa premetallurgical laboratory (Institute of the Strength of Materials of the Institute of Applied Physics, Academy of Sciences, USSR), founder of the Pauli-Ter Fischbacon metallurgical laboratory (Department of Physical-Technical Institute), recipient of the Stalin Prize (1945), the Order of the Red Banner of Labor (1956) and the Order of Lenin (1955). The article is dedicated with the strength of materials, phenomena of imperfect elasticity, temperature brittleness, hydrogen embrittlement, cold brittleness, influences of deformation speed on the mechanical properties of materials, effects of metals, and general problems of strength, plasticity, and mechanical properties of materials. Numerous personalities are mentioned in the introductory profile of Professor Davidov. References are given at the end of each article.

Editor: I.A. B.G. Lachinov, V.M. Stashevsky, V.L. Shchegolev, and V.L. Khokhlov. Director of the Institute of Applied Physics, USSR Institute of Applied Physics, Academy of Sciences USSR, SSSR, Khar'kov. Low-temperature Polymorphism of

minerals, etc., and E.E. Romashkevich (Institute of Applied Physics, Academy of Sciences, USSR, Leningrad). Time Dependence of Strength Under Different Load Conditions

Relyantsev, S.Z., T.I. Ouchter, A.A. Zhukovskiy, and B.N. Khabkin. Influence of Pressure and Deformation on the Process of Diffusion

Vl. B.Ia., and A.F. Sizman (Gomel State University imeni Gor'kogo, Gomel'). Diffusion of Great Specimens Prepared from Powdered Iron

Bryzgalov, V.I., and E.B. Mikhalev (Institut struktury metallov Ural'yan, Ural', Uralsk). Influence of Aluminized and Copper on the Deformation of Steel

Kon'kova, T.A. (Institut popravodistva AN SSSR, Leningrad-Destroj-rodnicheskij Institute, Academy of Sciences, USSR, Leningrad). Relationship between the Mechanical and the Real Characteristics of Crystals

Cherkez, R.J., and I.I. Antochuk (Gomel State Pedagogical Institute imeni G.G. Ushakov, Gomel'). Strengthening of Rock Salt Crystals by Impact of a Metal Hammer

Ugovnikov, M.O., and V.A. Palin (Institute for Metal Physics, Ural Branch, Academy of Sciences, USSR, Sverdlovsk). Some Aspects of Stress Relaxation in Metals

Troshillo, S.O., and Z.A. Vashol'man (Polytechnic Institute, Izhevsk, Udmurtia). Influence of Temperature on the Plastic Limit and Increasing the Plastic Anisotropy During Cold Hardening and Tempering of Springs

Olsuf'ev, I.I., and A.M. Kolpitsyn (MTZ po gosudarstvennoi nafti i polubezpecheniya naftovogo shchita Zapovedi, a. Leningrad-Gidrometallurgicheskij Research Institute for Petroleum Refining and Production of Synthetic Liquid Fuels, Leningrad). Nature of the Physical Yield Point of Steel

121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 399 400 401 402 403 404 405 406 407 408 409 409 410 411 412 413 414 415 416 417 418 419 419 420 421 422 423 424 425 426 427 428 429 429 430 431 432 433 434 435 436 437 438 439 439 440 441 442 443 444 445 446 447 448 449 449 450 451 452 453 454 455 456 457 458 459 459 460 461 462 463 464 465 466 467 468 469 469 470 471 472 473 474 475 476 477 478 479 479 480 481 482 483 484 485 486 487 487 488 489 489 490 491 492 493 494 495 496 497 497 498 499 499 500 501 502 503 504 505 506 507 508 509 509 510 511 512 513 514 515 515 516 517 517 518 519 519 520 521 522 523 524 525 525 526 527 527 528 529 529 530 531 532 533 534 535 535 536 537 537 538 539 539 540 541 542 542 543 544 544 545 546 546 547 548 548 549 549 550 551 552 553 553 554 555 555 556 557 557 558 559 559 560 561 562 563 563 564 565 565 566 567 567 568 569 569 570 571 571 572 573 573 574 575 575 576 577 577 578 579 579 580 581 581 582 583 583 584 585 585 586 587 587 588 589 589 590 591 591 592 593 593 594 595 595 596 597 597 598 599 599 600 601 601 602 603 603 604 605 605 606 607 607 608 609 609 610 611 611 612 613 613 614 615 615 616 617 617 618 619 619 620 621 621 622 623 623 624 625 625 626 627 627 628 629 629 630 631 631 632 633 633 634 635 635 636 637 637 638 639 639 640 641 641 642 643 643 644 645 645 646 647 647 648 649 649 650 651 651 652 653 653 654 655 655 656 657 657 658 659 659 660 661 661 662 663 663 664 665 665 666 667 667 668 669 669 670 671 671 672 673 673 674 675 675 676 677 677 678 679 679 680 681 681 682 683 683 684 685 685 686 687 687 688 689 689 690 691 691 692 693 693 694 695 695 696 697 697 698 699 699 700 701 701 702 703 703 704 705 705 706 707 707 708 709 709 710 711 711 712 713 713 714 715 715 716 717 717 718 719 719 720 721 721 722 723 723 724 725 725 726 727 727 728 729 729 730 731 731 732 733 733 734 735 735 736 737 737 738 739 739 740 741 741 742 743 743 744 745 745 746 747 747 748 749 749 750 751 751 752 753 753 754 755 755 756 757 757 758 759 759 760 761 761 762 763 763 764 765 765 766 767 767 768 769 769 770 771 771 772 773 773 774 775 775 776 777 777 778 779 779 780 781 781 782 783 783 784 785 785 786 787 787 788 789 789 790 791 791 792 793 793 794 795 795 796 797 797 798 799 799 800 801 801 802 803 803 804 805 805 806 807 807 808 809 809 810 811 811 812 813 813 814 815 815 816 817 817 818 819 819 820 821 821 822 823 823 824 825 825 826 827 827 828 829 829 830 831 831 832 833 833 834 835 835 836 837 837 838 839 839 840 841 841 842 843 843 844 845 845 846 847 847 848 849 849 850 851 851 852 853 853 854 855 855 856 857 857 858 859 859 860 861 861 862 863 863 864 865 865 866 867 867 868 869 869 870 871 871 872 873 873 874 875 875 876 877 877 878 879 879 880 881 881 882 883 883 884 885 885 886 887 887 888 889 889 890 891 891 892 893 893 894 895 895 896 897 897 898 899 899 900 901 901 902 903 903 904 905 905 906 907 907 908 909 909 910 911 911 912 913 913 914 915 915 916 917 917 918 919 919 920 921 921 922 923 923 924 925 925 926 927 927 928 929 929 930 931 931 932 933 933 934 935 935 936 937 937 938 939 939 940 941 941 942 943 943 944 945 945 946 947 947 948 949 949 950 951 951 952 953 953 954 955 955 956 957 957 958 959 959 960 961 961 962 963 963 964 965 965 966 967 967 968 969 969 970 971 971 972 973 973 974 975 975 976 977 977 978 979 979 980 981 981 982 983 983 984 985 985 986 987 987 988 989 989 990 991 991 992 993 993 994 995 995 996 997 997 998 999 999 1000 1000 1001 1001 1002 1002 1003 1003 1004 1004 1005 1005 1006 1006 1007 1007 1008 1008 1009 1009 1010 1010 1011 1011 1012 1012 1013 1013 1014 1014 1015 1015 1016 1016 1017 1017 1018 1018 1019 1019 1020 1020 1021 1021 1022 1022 1023 1023 1024 1024 1025 1025 1026 1026 1027 1027 1028 1028 1029 1029 1030 1030 1031 1031 1032 1032 1033 1033 1034 1034 1035 1035 1036 1036 1037 1037 1038 1038 1039 1039 1040 1040 1041 1041 1042 1042 1043 1043 1044 1044 1045 1045 1046 1046 1047 1047 1048 1048 1049 1049 1050 1050 1051 1051 1052 1052 1053 1053 1054 1054 1055 1055 1056 1056 1057 1057 1058 1058 1059 1059 1060 1060 1061 1061 1062 1062 1063 1063 1064 1064 1065 1065 1066 1066 1067 1067 1068 1068 1069 1069 1070 1070 1071 1071 1072 1072 1073 1073 1074 1074 1075 1075 1076 1076 1077 1077 1078 1078 1079 1079 1080 1080 1081 1081 1082 1082 1083 1083 1084 1084 1085 1085 1086 1086 1087 1087 1088 1088 1089 1089 1090 1090 1091 1091 1092 1092 1093 1093 1094 1094 1095 1095 1096 1096 1097 1097 1098 1098 1099 1099 1100 1100 1101 1101 1102 1102 1103 1103 1104 1104 1105 1105 1106 1106 1107 1107 1108 1108 1109 1109 1110 1110 1111 1111 1112 1112 1113 1113 1114 1114 1115 1115 1116 1116 1117 1117 1118 1118 1119 1119 1120 1120 1121 1121 1122 1122 1123 1123 1124 1124 1125 1125 1126 1126 1127 1127 1128 1128 1129 1129 1130 1130 1131 1131 1132 1132 1133 1133 1134 1134 1135 1135 1136 1136 1137 1137 1138 1138 1139 1139 1140 1140 1141 1141 1142 1142 1143 1143 1144 1144 1145 1145 1146 1146 1147 1147 1148 1148 1149 1149 1150 1150 1151 1151 1152 1152 1153 1153 1154 1154 1155 1155 1156 1156 1157 1157 1158 1158 1159 1159 1160 1160 1161 1161 1162 1162 1163 1163 1164 1164 1165 1165 1166 1166 1167 1167 1168 1168 1169 1169 1170 1170 1171 1171 1172 1172 1173 1173 1174 1174 1175 1175 1176 1176 1177 1177 1178 1178 1179 1179 1180 1180 1181 1181 1182 1182 1183 1183 1184 1184 1185 1185 1186 1186 1187 1187 1188 1188 1189 1189 1190 1190 1191 1191 1192 1192 1193 1193 1194 1194 1195 1195 1196 1196 1197 1197 1198 1198 1199 1199 1200 1200 1201 1201 1202 1202 1203 1203 1204 1204 1205 1205 1206 1206 1207 1207 1208 1208 1209 1209 1210 1210 1211 1211 1212 1212 1213 1213 1214 1214 1215 1215 1216 1216 1217 1217 1218 1218 1219 1219 1220 1220 1221 1221 1222 1222 1223 1223 1224 1224 1225 1225 1226 1226 1227 1227 1228 1228 1229 1229 1230 1230 1231 1231 1232 1232 1233 1233 1234 1234 1235 1235 1236 1236 1237 1237 1238 1238 1239 1239 1240 1240 1241 1241 1242 1242 1243 1243 1244 1244 1245 1245 1246 1246 1247 1247 1248 1248 1249 1249 1250 1250 1251 1251 1252 1252 1253 1253 1254 1254 1255 1255 1256 1256 1257 1257 1258 1258 1259 1259 1260 1260 1261 1261 1262 1262 1263 1263 1264 1264 1265 1265 1266 1266 1267 1267 1268 1268 1269 1269 1270 1270 1271 1271 1272 1272 1273 1273 1274 1274 1275 1275 1276 1276 1277 1277 1278 1278 1279 1279 1280 1280 1281 1281 1282 1282 1283 1283 1284 1284 1285 1285 1286 1286 1287 1287 1288 1288 1289 1289 1290 1290 1291 1291 1292 1292 1293 1293 1294 1294 1295 1295 1296 1296 1297 1297 1298 1298 1299 1299 1300 1300 1301 1301 1302 1302 1303 1303 1304 1304 1305 1305 1306 1306 1307 1307 1308 1308 1309 1309 1310 1310 1311 1311 1312 1312 1313 1313 1314 1314 1315 1315 1316 1316 1317 1317 1318 1318 1319 1319 1320 1320 1321 1321 1322 1322 1323 1323 1324 1324 1325 1325 1326 1326 1327 1327 1328 1328 1329 1329 1330 1330 1331 1331 1332 1332 1333 1333 1334 1334 1335 1335 1336 1336 1337 1337 1338 1338 1339 1339 1340 1340 1341 1341 1342 1342 1343 1343 1344 1344 1345 1345 1346 1346 1347 1347 1348 1348 1349 1349 1350 1350 1351 1351 1352 1352 1353 1353 1354 1354 1355 1355 1356 1356 1357 1357 1358 1358 1359 1359 1360 1360 1361 1361 1362 1362 1363 1363 1364 1364 1365 1365 1366 1366 1367 1367 1368 1368 1369 1369 1370 1370 1371 1371 1372 1372 1373 1373 1374 1374 1375 1375 1376 1376 1377 1377 1378 1378 1379 1379 1380 1380 1381 1381 1382 1382 1383 1383 1384 1384 1385 1385 1386 1386 1387 1387 1388 1388 1389 1389 1390 1390 1391 1391 1392 1392 1393 1393 1394 1394 1395 1395 1396 1396 1397 1397 1398 1398 1399 1399 1400 1400 1401 1401 1402 1402 1403 1403 1404 1404 1405 1405 1406 1406 1407 1407 1408 1408 1409 1409 1410 1410 1411 1411 1412 1412 1413 1413 1414 1414 1415 1415 1416 1416 1417 1417 1418 1418 1419 1419 1420 1420 1421 1421 1422 1422 1423 1423 1424 1424 1425 1425 1426 1426 1427 1427 1428 1428 1429 1429 1430 1430 1431 1431 1432 1432 1433 1433 1434 1434 1435 1435 1436 1436 1437 1437 1438 1438 1439 1439 1440 1440 1441 1441 1442 1442 1443 1443 1444 1444 1445 1445 1446 1446 1447 1447 1448 1448 1449 1449 1450 1450 1451 1451 1452 1452 1453 1453 1454 1454 1455 1455 1456 1456 1457 1457 1458 1458 1459 1459 1460 1460 1461 1461 1462 1462 1463 1463 1464 1464 1465 1465 1466 1466 1467 1467 1468 1468 1469 1469 1470 1470 1471 1471 1472 1472 1473 1473 1474 1474 1475 1475 1476 1476 1477 1477 1478 1478 1479 1479 1480 1480 1481 1481 1482 1482 1483 1483 1484 1484 1485 1485 1486 1486 1487 1487 1488 1488 1489 1489 1490 1490 1491 1491 1492 1492 1493 1493 1494 1494 1495 1495 1496 1496 1497 1497 1498 1498 1499 1499 1500 1500 1501 1501 1502 1502 1503 1503

YAKOVLEVA, E.S.; SYUTKIN, V.I.

Mechanism of high temperature deformation of nickel-aluminum
and nickel-copper solid solutions. Issl.po zhарopr.splav, 4:
36-40 '59. (MIRA 13:5)

(Deformations (Mechanics)) (Nickel alloys--Metallography)

SOV/126-7-6-21/24

AUTHORS: Syutkina, V.I. and Yakovleva, E. S.

TITLE: Mechanism of High Temperature Deformation of Nickel-Aluminium and Nickel-Copper Solid Solutions

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 7, Nr 6,
pp 929-936 (USSR)

ABSTRACT: In this report the results of an investigation of the effect of alloying nickel with aluminium and nickel with copper on the mechanism of deformation are given. The compositions of the investigated alloys are given in the table, p 930. Nickel of 99.99% purity, which had been remelted in vacuum, was used as the basis metal for the preparation of the alloys. The purity of aluminium used was 99.99%, and that of copper, 99.95%. The working specimens were 50 x 2 x 0.3 mm in size. The specimens were annealed so as to obtain the same grain size. The linear grain size was 0.1 mm. The temperature of recrystallization annealing for pure nickel was 800°C, and for the alloys 900-100°C. The specimens were deformed at two temperatures and at two straining rates. The nickel-copper alloys were elongated at 400°C at a rate of 0.2%/second by 2 and 12 per cent, and at 700°C

Card 1/5

SOV/126-7-6-21/24

Mechanism of High Temperature Deformation of Nickel-Aluminium
and Nickel-Copper Solid Solutions

at 2 per cent/hour by 2 per cent. In order to prevent oxidation of the specimen surfaces, pulling was carried out in a nitrogen atmosphere. Prior to deformation the specimens were electropolished and etched. The conclusions on the deformation mechanism were arrived at on the basis of results obtained in the microscopic study of the deformed specimen surface, as well as from a study of the extent and form of the radial diffuseness of X-ray interference maxima in Laue photographs. The microscopic study of the surface was carried out by means of the Linnik interferometer MII-1. The Laue picture was taken in a white molybdenum or tungsten irradiation. Under the above conditions of deformation the following processes were found to take place in the alloys: 1. Shear along slip planes. 2. Shear along grain boundaries. 3. Displacement of grain boundaries. 4. Splitting of the grains into blocks. These phenomena occurred after two as well as after 12% deformation. In this paper the results obtained with 2 per cent deformation are mainly

Card 2/5

SOV/126-7-6-21/24

Mechanism of High Temperature Deformation of Nickel-Aluminium
and Nickel-Copper Solid Solutions

reported. After straining by 12 per cent, the surface relief was so coarse that quantitative measurements were impossible. In Fig 1a the dependence of shear along the grain boundaries on the composition of nickel-aluminium alloys, and in Fig 1b the dependence of shear along the grain boundaries on the composition of nickel-copper alloys, at various temperatures and deformation rates, are shown. In Fig 2 grain boundary displacement in pure nickel at various temperatures and degrees of deformation is shown. In Fig 3 grain displacement in nickel-aluminium alloys, deformed by 2 per cent at 700°C is shown. Fig 4 shows the grain displacement in nickel-copper alloys under the same conditions. Fig 5 is an X-ray photograph of a 0.5% aluminium alloy, deformed by 2 per cent at 700°C. The authors arrived at the following conclusions:

1. Shear along the grain boundaries and a displacement of boundaries occurs in nickel deformed at a high temperature. Both processes are due to the action of stresses arising in the grain boundaries during

Card 3/5

SOV/126-7-6-21/2⁴

Mechanism of High Temperature Deformation of Nickel-Aluminium
and Nickel-Copper Solid Solutions

deformation. They are directional diffusion processes. Shear along grain boundaries is a deformation process which leads to a relaxation of stresses in the grains and to a strengthening of the grain boundaries. The grain bodies are not deformed when the grain boundaries are displaced (Ref 10). This displacement process only leads to a decrease in the stresses which bring it about and to a restoration of the correct structure of the metal crystal.

2. Alloying of nickel with aluminium and copper greatly strengthens the grain boundaries and lowers their mobility. This is due to the fact that diffusion processes in the boundary are rendered more difficult because of the rectification of the lattice due to internal adsorption.

3. Strengthening of the boundaries on alloying is greater than that of the grain bodies. Therefore, in order to strengthen an alloy for service under creep conditions, it is sufficient to add a very small quantity of addition element. However, the grain bodies are only

Card 4/5

SOV/126-7-6-21/24

Mechanism of High Temperature Deformation of Nickel-Aluminium
and Nickel-Copper Solid Solutions

slightly strengthened due to such alloying and the grains are easily deformed by splitting up into blocks by polygonisation under load. In order to strengthen the grain bodies the alloy element should be introduced in a considerably greater quantity. It is not recommended that the alloy element should be introduced in such quantities as to greatly decrease the mobility of the grain boundaries, as this tends to make the metal liable to brittle fracture in high temperature deformation. There are 5 figures, 1 table and 10 references, 7 of which are Soviet and 3 English.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Metal Physics, Ac.Sc. USSR)

SUBMITTED: April 5, 1958

Card 5/5

SYUTKINA, V.I.; YAKOVLEVA, E.S.

Effect of the composition of an alloy on the traces of slip in
alpha-solid solutions of magnesium in aluminum. Fiz. met. i
metalloved. 10 no.3:481-486 S '60. (MIRA 13:10)

1. Institut fiziki metallov AN SSSR.
(Magnesium-aluminum alloys--Metallography)
(Electron microscopy)

24-7500 1160 1454

32556
S/126/61/012/005/016/028
E091/E335

AUTHORS: Syutkina, V.I. and Yakovleva, E.S.

TITLE: Grain slip and boundary migration in nickel alloys deformed at high temperatures

PERIODICAL: Fizika metallov i metallovedeniye, v.12, no. 5, 1961, 740 - 747

TEXT: The influence of the concentration of alloying elements on the slip and migration of boundaries in the binary solid solutions Ni-Al (0.02 - 3% Al), Ni-Cu (0.1-60% Cu) and Ni-Co (0.5-60% Co) was studied. The low concentration ranges were studied particularly thoroughly since small percentages of alloy elements exert a very strong influence on the properties of grain boundaries. The alloys were made by means of vacuum melting, using metals of 99.99% purity. The average grain size of all alloys was 0.1 mm. The alloys were deformed in tension at a rate of 2% per hour at a temperature of 700°C. To prevent oxidation of the specimens deformation was carried out in an atmosphere of purified nitrogen. The surface of the specimens was subjected to electrolytic polishing prior to Card 1/4

X

32656

S/126/61/012/005/016/028

E091/E335

Grain slip and

deformation. Slip along the boundaries and migration of boundaries was studied by means of an interferometer at a magnification of X520 and by means of an electron microscope at a magnification of X6500 after the specimens had been extended by 2%. The height of the slip steps on the surface, forming during deformation along the boundaries of adjacent grains, was taken as an indication of the degree of slip. This value was measured with an accuracy of up to 0.1μ , from the displacement of interference lines. The extent of displacement of the boundaries was judged from the distance between their positions prior to and after deformation, measured along the generatrix of the specimen. This distance was measured with an accuracy of up to 1μ , by means of an ocular scale. The initial position of the boundaries became visible during electrolytic polishing. All subsequent positions became evident owing to slip occurring along the boundaries during deformation. It was found that two regions exist in binary Ni-base α -solid solutions, in which the concentration of the alloy element exerts a strong influence on the refractory properties of the

Card 2/4

32656

S/126/61/012/005/016/028

E091/E335

Grain slip and ...

alloy. The first region lies in the interval of dilute solid solution. This region is the narrower the greater the difference in radius, values and position in the periodic table, between the atoms of the alloying elements and those of the basic metal. Addition of alloy elements to nickel within the limits of these concentrations causes strengthening of the grain boundaries, which increases its plasticity and the life under load in high-temperature testing. The second concentration region is situated in an area half-way between the terminal solubilities of the alloying element in nickel. At these concentrations, the mobility of the boundaries decreases and their shape becomes more complex. These factors exert opposite effects on the formation and propagation of cracks along the grain boundaries. The shape of the boundaries is a factor of considerable importance. It suppresses the true influence of decrease in boundary mobility and considerably increases the plasticity and creep resistance of the alloy. A serrated shape of grain boundaries can be brought about during high-temperature deformation by selecting an appropriate percentage of alloying element.

Card 3/4

X

Grain slip and

32656
S/126/61/012/005/016/028
E091/E335

There are 3 figures and 10 references: 7 Soviet-bloc (one of which is a translation of non-Soviet-bloc publication) and 3 non-Soviet-bloc. The English-language references mentioned are: Ref. 6: H.C. Chang, N.J. Grant - J. Metals, 1952, 4, 619; 1953, 5, 305; Ref. 8: N.J. Grant, A.R. Chaudhuri, I.R. Silver, D.C. Canow - Trans. AIMME, 1959, 215, 540.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physics of Metals of the AS USSR)

SUBMITTED: February 27, 1961

Card 4/4

S/181/62/004/010/041/063
B102/B112

AUTHORS: Syutkina, V. I., and Yakovleva, E. S.

TITLE: Mechanical properties of copper-gold alloys ordering themselves

PERIODICAL: Fizika tverdogo tela, v. 4, no. 10, 1962, 2901-2907

TEXT: The effect of the composition and the ordering of high-purity (99.99%) copper-gold alloys with 18, 19, 20, 22, 25, 27, 30, 31, and 33% gold on the mechanical properties was studied. Part of the specimens (40·2·0.5-mm platelets) were left disordered, and the other rest transformed into an ordered state by long-period annealing. In this annealing the temperature was reduced in such a way that the holding times increased with decreasing temperature. Cooling from 410 to 200°C lasted e. g., 230 hrs. In this way a maximum ordering could be achieved as was verified by resistivity determinations. The mechanical properties were determined from the stress-strain diagrams. Type and distribution of the slip traces on the specimen surfaces were studied microscopically. The studies showed that the ordering markedly changes the mechanical properties and the

Card 1/2

Mechanical properties of copper-gold ... S/181/62/004/010/041/063
B102/B112

deformation mechanism throughout the range of concentration where Cu₃Au-type ordering occurs. The difference in the behavior of ordered and of disordered alloys under loading is explained by pair dislocations in the disordered state being more strongly subject to structural change than the ordinary dislocations when the concentration and the degree of deformation are changed. Not only the dislocation energy but also the structure and the impurity content of the dislocations changes, thus causing a change in the strengthening mechanism. There are 5 figures and 1 table.

ASSOCIATION: Institut fiziki metallov AN SSSR, Sverdlovsk (Institute of the Physics of Metals AS USSR, Sverdlovsk)

SUBMITTED: June 9, 1962

Card 2/2

40974

18.8200

S/659/62/009/000/004/030
1003/I203AUTHORS: Syutkina, V. I., and Yakovleva, E. S.

TITLE: Slip and grain boundary movements in nickel alloys during high-temperature deformation

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Issledovaniya po zharoprochnym splavam v. 9. 1962. Materialy Nauchnoy sessii po zharoprochnym splavam (1961 g.), 30-37

TEXT The influence of the concentrations of alloying element in the binary Ni-Al, Ni-Cu and Ni-Co solid solutions was investigated by an interferometer, electron microscope and by X-ray diffraction. The relationship between the concentrations of the alloying elements and the grain boundary movements is not linear. The minima and maxima are explained by the non-uniform deformation throughout the grain, by the adsorption of impurities along the grain boundaries, and by the formation of blocks of the mosaic structure. In the following discussion, P. A. Kondrat'eva stressed the interest of the results obtained, but pointed out that she had arrived at some different conclusions and suggested that some of the results in this work be checked. There are 2 figures

Card 1/1

SYUTKINA, V.I.; YAKOVLEVA, E.S.

Microscopic study of the deformation of ordered alloys. Fiz.met.
i metalloved. 14 no.5:742-749 N '62. (MIRA 15:12)

1. Institut fiziki metallov AN SSSR.
(Alloys--Metallography)(Deformations(Mechanics))

SYUTKINA, V.I.; YAKOVLEVA, E.S.

Mechanical properties of ordering copper-gold alloys. Fiz.tver.
tela 4 no.10:2901-2907 0 '62. (MIRA 15:12)

1. Institut fiziki metallov AN SSSR, Sverdlovsk.
(Copper-gold alloys) (Dislocations in metals)

L 12476-63

EWP(q)/EWT(m)/BDS AFFTC JD
S/185/63/008/003/006/009

56

AUTHOR: Syutkina, V. I. and Yakovleva, E. S.

TITLE: Effect of ordering on the deformation mechanism of Cu-Au and Cu-Pd
alloys

27 27 27

PERIODICAL: Ukrains'kyy Fizychnyy Zhurnal, v. 8, no. 3, 1963, 369-373.

TEXT: The effect of ordering on the mechanical properties and deformation mechanism has been investigated very little. In this work an investigation is made throughout the whole concentration range of the existence of Cu₃M ordering. Copper-gold and copper-palladium alloys were investigated. The nature of distribution of slippage traces and investigated by means of optical and electron microscopes. It is shown that in all concentration ranges of the existence of Cu₃M type ordering, both the deformation mechanism and properties of alloy undergo drastic changes. The results are treated from the viewpoint of the theory of dislocations. The article contains 4 figures and a 13 item bibliography.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of the Metal Physics
of the Academy of Sciences of the USSR, Sverdlovsk.)

Card 1/1

L 22899-65 EWP(k)/EWT(m)/EWP(b)/T/EWA(d)/EWP(t) Pf-4 IJP(c) JD/HW
ACCESSION NR: AP5001247 S/0126/64/018/005/0770/0777

AUTHOR: Gerzha, L.A.; Syutkina, V.I.; Yakovleva, E.S.

TITLE: Strain hardening of ordered alloys

SOURCE: Fizika metallov i metallovedeniye, v. 18, no. 5, 1964, 770-777

TOPIC TAGS: ordered alloy, alloy hardening, strain hardening, copper alloy, gold alloy,
alloy conductivity, lead alloy

ABSTRACT: An attempt was made to check experimentally the magnitude of hardening caused by the intersection of dislocations with domain boundaries. To this end, the dependence of the hardening of an ordered alloy, Cu₃Au, on the size of the domains was studied by reducing the size of the domains, which was followed by means of changes in the electrical resistance of the alloy. The hardening coefficient was determined as a function of the size of the domains in Cu₃Au and compared to the hardening coefficient of Cu₃Pd. Mechanisms are discussed which could account for the high degree of hardenability of alloys deformed by paired dislocations. It was shown experimentally that in ordered alloys, strain hardening due to an increase in the extent of antiphased boundaries

Card 1/2

L 22899-65

ACCESSION NR: AP5001247

and involving the intersection of dislocations with domain boundaries is so slight that it can be neglected in analyzing the causes of the hardening of such alloys. Orig. art. has 5 figures and 3 formulas.

ASSOCIATION: Institut fiziki metallov AN SSSR (Metal physics institute, AN SSSR)

SUBMITTED: 10Mar64

ENCL: 00

SUB CODE: MM

NO REF SOV: 009

OTHER: 015

Card 2/2

L 26643-66 EWT(m)/EWP(w)/T/EWP(t) IJP(c) JD/JG

ACC NR: AP5025330

SOURCE CODE: UR/0126/65/020/003/0433/0441

55
B

AUTHOR: Gerzha, L. A.; Syutkina, V. I.; Yakovleva, E. S.

ORG: Institute of Metal Physics, AN SSSR (Institut fiziki metallov AN SSSR)

TITLE: Brittleness of AB ordered alloys with face centered cubic lattice

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 3, 1965, 433-441

18

TOPIC TAGS: ordered alloy, crystal dislocation, copper alloy, shear stress,
metal recrystallization, crystal lattice structure, gold alloy,
brittleness

27 27

ABSTRACT: The effect of ordering on the development of brittleness in CuAu alloy was studied. A dislocation model was suggested to explain the reason for the development of the brittle state in AB type ordered alloys with face centered cubic lattice. It is caused by the formation of a fine domain structure with differently directed layers of similar atoms, since with the migration of displacement through these domain boundaries, shearing stress should change. In the process of CuAu alloy ordering, recrystallization occurs, caused by phase work-hardening which develops due to the change in alloy lattice symmetry. We take this opportunity to thank B. A. Grinberg for useful discussions in

Card 1/2

UDC: 539.292:539.56

Z

L 26643-66

ACC NR: AP5025330

considering the results of our work. Orig. art. has: 8 figs.

SUB CODE: 11,20, / SUBM DATE: 22Jul64/ ORIG REF: 008/ OTH REF: 012

Card 2/2

SYUY, L.S.

Decomposition formula for the approximate calculation of double
integrals, Soob. AN Gruz. SSR 29 no.5:521-524 N '62.

(MIRA 18:3)

1. Matematicheskoye otdeleniye Chanchun'skogo universiteta, K'tay.
Submitted September 15, 1961.

SYUZEV, K.V.; LEYN, S.Ya.

Is it expedient to insert corrections into the schedule of costs for
pipeline construction? Stroi. truboprov. 8 no.5:37 My '63.
(MIRA 16:5)

1. Starshiy inzh. proizvodstvenno-tehnicheskogo otdeleniya SU-6
tresta Tatnefteprovodstroy, Perm' (for Syuzev). 2. Glavnyy
ekspert po smetnoy dokumentatsii Gosgazproma SSSR (for Leyn).
(Pipelines--Cost of construction)

Syuzev, Ye. N.

USSR/ Electronics - Power interruption unit

Card 1/1 Pub. 133 - 13/21

Authors : Khmel'nitskiy, Ye. P., and Syuzev, Ye. N.

Title : Automatic control of an excitor and low-power stages in a transmitter

Periodical : Vest. svyazi 3, page 24, Mar 1955

Abstract : A description is presented of a circuit diagram employed on radio broadcasting stations for automatic control of excitation and the interruption of the power supply to the low-power stages of a transmitter, in case of an overvoltage or failure of an excitor or one of the low-power stages. Circuit diagram.

Institution :

Submitted :

SYUZEVA, Z.F.

Pharmacognostic study of Carlina Biebersteinii Bernh. Trudy Perm.
farm. inst. no.1:101-120 '59. (MIRA 15:1)

1. Permskiy farmatsevticheskiy institut, kafedra farmakognozii.
(THISTLE)

SYUZYAYEV, V.I.; BERDYYEV, A.A.

Studying the velocity of ultrasonic dispersion in systems containing
chloral. Izv. AN Turk. SSR no.6:9-15 '57. (MIRA 11:1)

1. Institut fiziki i geofiziki AN Turkmeneskoy SSR i Turkmeneskiy
gosudarstvennyy universitet im. A.M. Gor'kogo.
(Ultrasonic testing) (Chloral) (Systems (Chemistry))

SYUZYAYEV, V.I.

SYUZYAYEV, V.I.; BERDYYEV, A.A.; KOLANDO, N.I.

Surface tension of some binary systems containing chloral. Izv.
AN Turk. SSR no.6:81-84 '57. (MIRA 11:1)

1. Institut fiziki i geofiziki AN Turkmenskoy SSR.
(Chloral) (Surface tension) (Systems (Chemistry))

SYUZYAYEV, V. I.

(SYUZYAYEV)

SYUZYAYEV, V.I., Cand Phys-Math Sci--(diss) "Study of the diffusion of
superactive diffusion velocity of ultra sound in dual systems containing ^{viz} chloral." Ashkhabad,
1958. 15 pp (Turkmen State U im A.M. Gor'kiy), 100 copies (KL,39-58,122)

-14-

SYUZYAYEV, V.L.

Ultrasonic speed in the systems chloral-water and chloral-alcohols.
Izv. AN Turk. SSR no.2:69-72 '58. (MIRA 11:4)

1.Turkmenskiy gosudarstvennyy universitet im. A.M. Gor'kogo.
(Chloral) (Ultrasonics)

SYUZYAYEV, V.I.; REDZHEPOV, I.; SERUKHOVA, L.S.

Isothermal study of surface tension in some systems containing
chloral. Izv. AN Turk. SSR no.3:10-15 '58. (MIRA 11:9)

1.Turkmenskiy gosudarstvenny universitet im. A.M. Gor'kogo.
(Surface tension) (Systems(Chemistry)) (Chloral)

SYUZYAYEV, V. I., Cand Phys-Math Sci -- (diss) "An Investigation of the Speed of Propagation of Ultrasound in Dual Systems Containing Chloral." Moscow, 1960, 13 pp, (Ministry of Education RSFSR; Mosk. Obl. Pedagogic Institute im N. M. Krupskaya). 150 copies no price given -- A list of the author's works at the end of the text (10 entires). (KL, 21-60, 118)

SYUZYAYEV, V.I.

Ultrasound propagation velocity in binary liquid systems
(chloral - esters). Prim. ul'traakust. k issl. veshch,
no.13:199-206 '61. (MIRA 16:6)

(Ultrasonic waves—Speed)
(Liquids—Acoustic properties)

Inst : Not given.
Title : On the Effect of Yeast Obtained by Hydrolysis
upon the Immunological Reactivity of Calves.

APPROVED FOR RELEASE: 08/31/2001 Ural CIA-RDP86-00513R001654320015-4"
vyp. 4, 135-139.

Abstract: The administration of hydrolyzed yeast in doses of 50 to 240 g. daily, between one month and six months of age, exerted a favorable effect on the growth and development of calves. The average daily weight gain of the experimental animals exceeded by 100 to 120 g. that of the calves in the control group. The calves of the experimental group reacted to the reiterated injection of the paratyphoid formol-vaccine by a higher titer of agglutinins.

Card 1/1

SHVARTS, S.S.; PAVLININ, V.N.; STUZYUMOVA, L.M.

Theoretical principles underlying prognoses of rodent populations
in the trans-Ural forest-steppe. Izv.AN SSSR. Otd.khim.nauk
no.10:3-59 0 '58. (MIRA 11:12)
(Ural Mountain region--Rodentia)

USSR / General Problems of Pathology. Immunity.

U

Abs Jour : Ref. Zhur - Biologiya, No. 3, 1959, 13454

Author : Syuzyumova, L. M.

Inst : *- First Edition Vlad. Ural. 1959*
Title : Some Problems of General Immunologic Reactivity
of the Organism of Calves.

Orig Pub : Zh. obshch. biol., 1958, 19, No. 1, 76-81

Abstract : According to the development of the skin reaction to the introduction of rabbit antiserum (AS) against bull serum, the immunologic reactivity of the organism of calves was judged. A typical inflammatory reaction to AS began to be evident in 2-4-week-old calves; the strongest reaction in 3-5-month-old animals. Seasonal fluctuations of reactivity were noted; during the winter period, a weakening; in June-August, the reaction is clearest.

~~00000002~~

SYUZYUMOVA, L. M.: Master Biol Sci (diss) -- "The epizootiological characteristics of the rodent population of southern Transuralsia (On material from the zoological, bacteriological, and helminthological investigation of rodents)". Sverdlovsk, 1959. 16 pp (Ural Affiliate of the Acad Sci USSR, Inst of Biology), 150 copies (KL, No 11, 1959, 118)

SYUZYUMOVA, L. M.

SOLDATENKOV, P.F., prof.; PLOTNIKOV, N.P., kand.veterin.nauk, starshiy nauchnyy sotrudnik; SYUZYUMOVA, L.M., mladshiy nauchnyy sotrudnik

"Nature of natural disease resistance of the organism of calves and measures for increasing it" by V.V.Nikol'skii. Reviewed by P.F.Soldatenkov, N.P.Plotnikov, L.M.Siuziumova. Zhivotnovodstvo 21 no.9:96 S '59.

(MIRA 13:1)

1. Zaveduyushchiy kafedroy normal'noy i patologicheskoy fiziologii Sverdlovskogo sel'skokhozyaystvennogo instituta (for Soldatenkov).
2. Sverdlovskiy nauchno-issledovatel'skiy institut po profilaktike poliomiyelita (for Plotnikov). 3. Institut biologii Ural'skogo filiala AN SSSR (for Syuzumova).

(Calves) (Immunity)

SYUZYUMOVA, L.V.

Epizootiological evaluation of individual landscape elements of
the trans-Ural forest steppe. Trudy Inst. biol. UFAN SSSR no.19:145-
154 '60. (MIRA 13:10)

(Chelyabinsk Province—Rodents as carriers of disease)
(Kurgan Province—Rodents as carriers of disease)

SYUZYUMOVA, L.M.

Preservation of pathological material under field conditions. Lab.
delo 7 no.5:46-50 Mr '61. (MIRA 14:5)

1. Laboratoriya zoologii Instituta biologii Ural'skogo filiala AN
SSSR (dir. - prof. S.S.Shvarts), Sverdlovsk.
(BIOLOGICAL SPECIMENS—COLLECTION AND PRESERVATION)

SYUZYUMOVA, L.M.

Endemicity of tundra rabies of the arctic fox on the Yamal Peninsula. Trudy Inst. biol. UFAN SSSR no.38:3-19 '65.
(MIRA 18:12)